

Unit Planning Guide: Grade 3 Unit 3a of 6

Unit Title: Application of Multiplication and Division (Part 1)	Pacing (Duration of Unit): 4 weeks
Grade: 3	Buffer Day(s): 2 days

Desired Results

Transfer Goals

Students will be able to independently use their learning to:

- **Make sense of problems and persevere in solving them.**
- **Reason abstractly and quantitatively.**
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- **Attend to precision.**
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

Established Goals (2011 MA Curriculum Frameworks Standards Incorporating the Common Core State Standards)

Standards (Priority Standards in bold):

- **3.OA.5** Apply properties of operations as strategies to multiply and divide.² *Examples: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. (Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$. (Associative property of multiplication.) Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16 = 56$. (Distributive property.)*
- **3.OA.6** Understand division as an unknown-factor problem. *For example, find $32 \div 8$ by finding the number that makes 32 when multiplied by 8.*
- **3.OA.7** Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.
- **3.OA.8** Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.³

WIDA for English Language Learners

Standard 1: ELLs **communicate** for **Social** and **Instructional** purposes within the school setting

Standard 3: ELLs **communicate** information, ideas and concepts necessary for academic success in the content area of **Mathematics**

In the lesson planning stage, teachers will need to differentiate lessons for ELLs. In order to accomplish this they will need: 1.) this curriculum map, 2.) a list of their ELLs and their proficiency levels, and 3.) appropriate language function expectations and scaffolds or supports.

- **3.OA.9** Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*
- **3.NBT.3** Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9×80 , 5×60) using strategies based on place value and properties of operations.

Meaning (*Mostly assessed through Performance Tasks/Assessments)

Big Ideas: (Statements and concepts written in teacher friendly language which reflect the important [but not obvious] generalizations we want students to be able to arrive at. These are used by the teacher to focus daily instruction.)

- Multiplication facts can be deduced from patterns.
- The distributive property allows us to decompose numbers in order to solve complex problems.
- Patterns are evident when multiplying a number by ten or multiple of 10.
- Multiplication and division are inverses; they undo each other.
- Multiplication is commutative but division is not.
- Some word problems may require two or more operations to find the solution.

Essential Questions: (Questions which frame ongoing and important inquiries about the big ideas. They are written for students and used in daily instruction to help engage students in meaningful thinking.)

- How can multiplication and division be used to solve real world problems?
- How can we practice multiplication facts in a meaningful way that can help us remember them?
- How can you tell if a problem will need more than one step to solve?
- How are multiplication and division related?

Acquisition (*Mostly assessed through traditional summative assessments)

Knowledge: Key basic concepts, facts, and key terms (written in phrases) students should be able to recall independently.

Students will know ...

- Vocabulary: commutative property, decomposing, difference, distributive property, equation, estimation, factor, mental computation, operation, quotient, unknown/variable
- That patterns are evident when multiplying a number by 10 or a multiple of 10
- Apply properties of operations (commutative, associative, distributive) as strategies to multiply and divide
- Understand division as an unknown factor problem
- Fluently multiply and divide within 100
- Strategies to solve two step word problems using all 4 operations
- How to evaluate the reasonableness of their answers
- That a letter or symbol represents an unknown quantity

Skills: The discrete skills and process students should be able to use independently (Bloom's Level of Learning should be noted in parentheses.)

Students will be skilled at:

- Applying properties of operations as strategies to multiply and divide
- Fluently multiplying and dividing within 100
- Solving problems involving the four operations and identifying and explaining patterns
- Decomposing the whole into groups
- Use estimation to determine reasonableness of products and quotients computed
- Be able to read, interpret, solve, and compose simple word problems dealing with multiplication and division
- Use inverse operations to verify accuracy of computation
- Solve an equation with an unknown quantity
- Represent a problem using an equation with a letter standing for an unknown quantity